

# Year 12 Transition Work – Chemistry

This work is designed to introduce you to the first topics you will encounter in AS Chemistry. A good understanding of these topics is vital as it underpins everything you will learn about.

You will need to research using the internet to be able to complete this task properly.

**Please find a suitable website aimed at post-16 students and NOT Wikipedia or Yahoo Answers.**

Some examples of suitable resources include (you will probably need to use more than one to help you):

[a-levelchemistry.co.uk](http://a-levelchemistry.co.uk) - Click onto the AQA AS part of the site. The site basically has lots of questions then answers to them that you can check through yourself.

[www.s-cool.co.uk/a-level/chemistry](http://www.s-cool.co.uk/a-level/chemistry) - Topic-by-topic look at through different chemistry topics.

[www.docbrown.info/](http://www.docbrown.info/) - A very wordy, detailed site, but good nonetheless.

[www.chemguide.co.uk](http://www.chemguide.co.uk) – Easy-to-follow AS – A Level website.

- 1) Write a couple of sentences detailing the layout of electrons in an atom. What is the arrangement of the electrons?

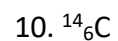
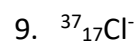
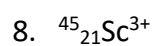
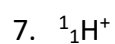
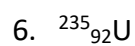
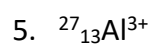
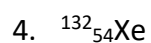
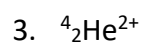
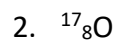
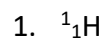
- 2) What is ionisation energy? Sketch a graph showing the trend of first ionisation energies across period 3.

3) What is successive ionisation energy? Sketch a graph showing the successive ionisation energy of magnesium. Why is this considered as evidence of electrons existing in energy levels?

4) Describe and explain how a mass spectrometer works. Draw diagrams showing this.

## 5) Atomic symbols

Deduce the number of protons, neutrons and electrons in the following species:



Use the periodic table to write symbols for the following species:

a) 8 protons, 8 neutrons, 10 electrons

b) 1 proton, 2 neutrons, 1 electron

c) 19 protons, 20 neutrons, 18 electrons

**In each case identify the particle. The first one has been done for you. (chemsheets)**

- 1 An atom with 6 protons and the same number of neutrons as a  $^{14}\text{N}$  atom  **$^{13}\text{C}$**
- 2 An atom with one more proton and the same number of neutrons than an atom of  $^{39}\text{K}$
- 3 An atom with 10 protons and the same number of neutrons as an atom of  $^{24}\text{Mg}$
- 4 An atom with one less proton and the same number of neutrons as an atom of  $^{66}\text{Zn}$
- 5 An atom with the same number of protons and two more neutrons as an atom of  $^{79}\text{Br}$
- 6 An atom with two fewer protons and the same number of neutrons as an atom of  $^{50}\text{Cr}$
- 7 An ion with one more proton and two more neutrons as an atom of  $^{20}\text{Ne}$  but the same number of electrons
- 8 An ion with two fewer protons and two fewer neutrons as an atom of  $^{40}\text{Ar}$  but the same number of electrons

Isotopes – What are isotopes? Write a summary of isotopes and give examples of the isotopes of carbon and of hydrogen. Also include how to work out relative formula mass from the stable isotopes of an element.

## Chemical tests

Draw a table with the headings, **Functional group, chemical test and result of test**. Fill in the table for the tests and positive results for – alkenes, haloalkanes, alcohols, aldehydes, carboxylic acids.